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AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111
Serial Number: 10/692,585
Filing Date: October 23, 2003
Title: DETERMINING A CHECKSUM FROM PACKET DATA

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method of determining a checksum of at least a portion of a packet, the method comprising:
accessing a checksum of the at least the portion of the packet;
adjusting the checksum of the at least the portion of the packet based on values of a subset of the at least the portion of the packet before and after modification of the subset; and
storing an identifier of the packet and a pointer to a set of data associated with the identifier, the set of data including the checksum of the at least the portion of the packet, wherein the set of data includes data identifying the location of a cached copy of the subset of the at least the portion of the packet.
2. (Original) The method of claim 1, wherein the packet comprises a Transmission Control Protocol (TCP) segment.
3. (Original) The method of claim 2, wherein the at least the portion of the packet comprises the TCP segment payload.
4. (Original) The method of claim 2, wherein the adjusting the checksum comprises:
subtracting a checksum of the subset of the segment before the modification; and
adding a checksum of the subset of the segment after the modification.
5. (Original) The method of claim 2, further comprising performing the adjusting of the checksum after each of a series of modifications of the segment.
6. (Original) The method of claim 1, further comprising:
receiving a request to access the subset of the at least the portion of the packet from an application;
caching the subset;

receiving a request to write data to the cached subset; and
performing the adjusting.

7. (Original) The method of claim 6, wherein the application comprises an application to parse and modify data included in the packet payload.

8. (Original) The method of claim 1, wherein the adjusting comprises executing program instructions at an engine of network processor having multiple engines.

9. (Original) The method of claim 8, wherein the engines comprise engines individually providing multiple threads having associated program counters.

10-11. (Canceled)

12. (Original) The method of claim 10, wherein the storing the identifier comprises storing the identifier in a content addressable memory (CAM).

13. (Currently Amended) A computer program product, disposed on a computer readable medium, to determine a checksum of at least a portion of a packet, ~~the program~~ the program including instructions for causing programmable circuitry to:

access a checksum of the at least the portion of the packet;

adjust the checksum of the at least the portion of the packet based on values of a subset of the at least the portion of the packet before and after modification of the subset; and

store an identifier of the packet and a pointer to a set of data associated with the identifier, the set of data including the checksum of the at least the portion of the packet, wherein the set of data includes data identifying the location of a cached copy of the subset of the at least the portion of the packet.

14. (Currently Amended) The program product on a medium of claim 13, wherein the packet comprises a Transmission Control Protocol (TCP) segment.

15. (Currently Amended) The program product on a medium of claim 14, wherein the at least the portion of the packet comprises the TCP segment payload.

16. (Currently Amended) The program product on a medium of claim 14, wherein the instructions to cause the programmable circuitry to adjust the checksum comprise instructions to cause the programmable circuitry to:

subtract the checksum of the subset of the segment before the modification; and
add the checksum of the subset of the segment after the modification.

17. (Currently Amended) The program product on a medium of claim 14, further comprising instructions for causing the programmable circuitry to perform the adjusting of the checksum after each of a series of modifications of the segment payload.

18. (Currently Amended) The program product on a medium of claim 13, further comprising instructions for causing the programmable circuitry to:

receive a request to access the subset of the at least the portion of the packet from an application;
cache the subset;
receive a request to write data to the cached subset; and
perform the adjusting.

19. (Currently Amended) The program product on a medium of claim 13, wherein the instructions comprise instructions in an instruction set of an engine of network processor having multiple multi-threaded engines integrated on a single die.

20-21. (Canceled)

22. (Currently Amended) The program product on a medium of claim 20, wherein the instructions to cause the programmable circuitry to store the identifier comprise instructions to

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cause the programmable circuitry to store the identifier in a content addressable memory (CAM).

23. (Original) A component, comprising:

an input interface;

an output interface;

logic to

access a checksum of at least a portion of a packet received via the input interface;

adjust the checksum of the at least the portion of the packet based on values of a subset of the at least the portion of the packet before and after modification of the subset; and
store an identifier of the packet and a pointer to a set of data associated with the identifier, the set of data including data identifying the checksum of the at least the portion of the packet, the set of data including data identifying the location of a cached copy of the subset of the at least the portion of the packet.

24. (Original) The component of claim 23, wherein the packet comprises a Transmission Control Protocol (TCP) segment.

25. (Original) The component of claim 23, wherein the logic further comprises logic to receive a request to access the subset of the at least the portion of the packet from an application; cache the subset; receive a request to write data to the cached subset; and perform the adjusting.

26. (Canceled)

27. (Currently Amended) A system, comprising:

at least one processor; and

at least one network interface operationally coupled to the processor, the network

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interface comprising:

at least one PHY (physical layer) component;

at least one framer; and

at least one Transmission Control Protocol (TCP) Offload Engine (TOE),

the Offload Engine comprising circuitry to determine a checksum of at least a portion of a TCP segment, the circuitry to:

access a checksum of the at least the portion of the segment;

adjust the checksum of the at least the portion of the TCP segment packet based on values of a subset of the at least the portion of the TCP segment packet before and after modification of the subset; and

store an identifier of the TCP segment and a pointer to a set of data associated with the identifier, the set of data including data identifying the checksum of the at least the portion of the TCP segment, the set of data including data identifying the location of a cached copy of the subset of the at least the portion of the TCP segment.

28. (Original) The system of claim 27, wherein the framer comprises an Ethernet framer.

29. (Currently Amended) The system program of claim 27, wherein the circuitry comprises an engine of network processor having multiple multi-threaded engines integrated on a single die.

30. (Canceled).